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TER (technical specialist radiotherapy)

Application of the positioning breast cancer

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Introduction and objective. Installation of a new system based on visible structured light allows us to place the patient in the unit in actual time. What are the benefits the treatment of breast cancer?

Methods and materials. The conventional positioning system for treatment of patients with breast radiation has been compared with Aling Rt of vision Rt. The conventional procedure requires the following steps. Carrying first day placing the patient according to TC references planned. Out the verification X-rays and references with paint on skin of the area of Repeat X-rays to confirm position of isocentre on the third light projection. Daily verification of incidence of the area on skin with Align Rt. We monitor in actual time modifying the procedure is modified as follows. Positioning of the patient, to correct deviations due to translation and rotation. The rotation around the vertical axis can be done by turning the table. Finally, we shall capture image establishing the final positioning. For comparison, the displacements are recorded by the Aling Rt obtained once the patient has been placed conventionally.

Results. Analyzed the figures in the three movements of translation and the three of rotation have been obtained for ensure correct patient positioning. In 34% of cases the isocenter distance is greater than or equal to 5 mm and 54% of patients the rotation angle exceeded 3 degrees

Conclusions. The Aling Rt positioning system offers more assurance in the daily reproduction of the treatment. This is fundamental for the advance radiotherapy techniques of the mammary gland. The Aling Rt means a considerable reduction of treatment time.

<http://dx.doi.org/10.1016/j.rpor.2013.03.616>

Customized bolus realization procedure

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Introduction. For the treatment of cutaneous injuries is often required the use of bolus to achieve the appropriate dose.

Meam/Objective. The need to treat in a homogeneous way such an irregular shape and in the lack of requiter (bolus) suitable in size, shape and density, we've seen ourselves forced to search for an option which can be diary modified due to the fast growing of the injury.

Materials and methods. Treatment of 2 injuries in the upper eyelid of a cutaneous lymphoma, with an approximate size of 4 cm × 2 cm × 2 cm and 2 cm × 2 cm × 2 cm, irregular shape and minimum distance between them. The chosen material was a kind of school Plasticine, nontoxic, with no colouring with lead and optimal malleability. And silicone dressing. The technique is developed this way: we put the dressing over the injury to avoid the direct contact with the Plasticine. We get the Plasticine cut in 1 cm thickness strips. We sketch the injuries, putting one of the strips between them. We cover up the injury using the strips making an homogeneous dome.

Result. A perfectly adapted bolus to a very irregular injury that changes its size every day.

Conclusions. Thanks to the substitution of the traditional bolus to a Plasticine bolus, we managed a more homogeneous dose and achieve better results.

<http://dx.doi.org/10.1016/j.rpor.2013.03.617>

Dosimetric effect of daily setup correction in prostate IMRT

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Objective. The aim of this work is to quantify the dose distribution degradation due to daily setup errors, taking into account the correction displacements provided by the analysis of daily cone beam CT images.

Method. This study was performed on the calculated IMRT treatment of a patient diagnosed with prostate adenocarcinoma. The prescribed dose was 78 Gy, at 2 Gy per fraction. The patient was immobilized in supine position, head resting on a pillow, arms crossed over the chest and both legs resting on the Combifix positioning system indexed to the treatment table. Prior to radiation therapy a 1 cm long fiducial marker (Visicoil) was implanted in the patient's prostate. Patient's preparation requirements were empty rectum and full bladder. The treatment was calculated with the treatment planning system (TPS) Xio and delivered with a Siemens Artiste linac. Daily megavoltage cone beam CT (CBCT) was performed taking the fiducial marker as a reference for the prostate location and positioning error calculation. In order to evaluate the dose distribution if no positioning errors had been corrected, copies of the treatment fields were obtained with the TPS and moved a distance equal to the displacement error detected. Taking into account all the displaced fields, the total dose distribution was obtained.

Results. The main results obtained in this study regard the PTV and rectum: the percentage of PTV that receives the 95% or higher of the prescribed dose would decrease from 95.73% to 76.45% if no setup corrections were performed and the mean rectum dose would increase from 44.51 Gy to 46.59 Gy.

Conclusions. In our centre, IMRT prostate treatments are performed with image guidance by means of a fiducial marker and daily CBCT. Daily patient setup corrections have proved to be adequate and yield a considerable difference in PTV coverage and rectum protection.

<http://dx.doi.org/10.1016/j.rpor.2013.03.618>

Functions of radiotherapy technicians (TERTs) in the Hospital Universitario de Fuenlabrada

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Objective. The main task of TERTs is to participate in all phases of the radiotherapy process, collaborating with the radiation oncologist and radiation physicist and ensuring the highest quality of treatment. We describe the various functions within our centre.

Material and methods. Siemens Somaton Open CT Simulator and General Electric PET-CT Simulator: Checking and preparing the simulation chart, and the restraint systems appropriate for the condition and realization of CT simulation. Elekta Focal contouring Station: we delimit critical organs in the area of treatment Elekta XIO-Planning system: the dosimetry TERT prepares a treatment plan. After approval by the physicist and the radiation oncologist, she produces the dosimetric report. Two Siemens Artiste linear accelerators: Prepare the treatment set-up. Perform imaging verification using Cone-Beam protocol and/or orthogonal portal images in the first four days of treatment, and a weekly check. Register the displacement between the starting position and the corrected position of the patient, and calculate the average displacement. Transfer portal images or cone-beam scans for revision by the radiation oncologist.

Results. The application of radiotherapy treatments as prescribed; meet dosimetry and radiation protection standards, as well as the specific procedures of your unit; organize and schedule work using criteria based on quality, service and optimization of available resources; and management of medical and technical information under appropriate supervision.

Discussion. The Radiotherapy Technicians are professionals dedicated to the application of radiotherapy treatments under the direction and supervision of the Medical Specialist; they are responsible for performing all functions assigned to its category by the relevant Administration according to their training curriculum, and must keep up-to-date their knowledge in order to successfully perform their functions and duties

<http://dx.doi.org/10.1016/j.rpor.2013.03.619>